3.2 Air Quality and Dust Control Plan

3.2.1 Air Quality Permitting

3.2.1.1 Overview

The Project will require either a Class I or Class II air quality permit, depending upon the potential and magnitude of emissions from point sources. Key elements of the air quality permit process are the development of an emission inventory and demonstration of compliance with all applicable EPA, state, and local agency air quality standards and guidelines. A general outline of the required information and analyses that demonstrate compliance with these requirements is presented below.

The first step in the process is the completion of the air impact analyses, which includes establishing background conditions, developing an inventory of regulated emissions, and the air impact analyses themselves. This information will then be packaged for inclusion in the National Environmental Policy Act (NEPA) document and to prepare an application for an air quality permit.

Monitoring has been initiated at the Project site and is described in detail below. The air impact analyses that will be developed from the monitoring are also described.

3.2.1.2 Pre-Application Monitoring

3.2.1.2.1 Monitoring Program Description

Rosemont has initiated a monitoring program in anticipation of the air quality permit application submittal. The monitoring program includes:

- Ambient monitoring for particulate matter less than 10 microns nominal aerodynamic diameter (PM_{10})
- Meteorological monitoring for wind speed, wind direction, standard deviation of the horizontal wind direction (sigma theta), temperature at 2 m, and differential temperature between 10 m and 2 m

The purpose of the monitoring program is to provide the measurements necessary to establish existing air quality and meteorological conditions at the proposed site of the Rosemont Copper mine in support of an air quality permit application for the facility. The meteorological and PM_{10} monitoring commenced on April 1, 2006 and June 16, 2006, respectively.

3.2.1.2.2 Monitoring Site Locations

The PM_{10} and meteorological monitoring locations are shown in Figure 2-1. The monitoring sites were selected based upon the following objectives:

- Establish representative background PM_{10} concentrations that will be added to predicted ambient impacts due to emissions from the proposed facility for comparison with the applicable NAAQS.
- Establish the meteorological conditions that will transport and disperse emissions from the proposed facility.

The PM_{10} monitoring site is located approximately 1.6 mi east-southeast of what will be the main open-pit area of the mine at an elevation of 4,870 ft. The site is at the south end of the Rosemont camp. This site is closest location with available power to operate the PM_{10} samplers and should capture representative background concentrations impacted by the natural terrain surrounding the location of the proposed facility.

The meteorological monitoring site is located very near the center of the proposed open pit at an elevation of 5,350 ft. This location, situated in undisturbed natural terrain except for roads and drilling sites, should capture the meteorological conditions resulting from both regional and local influences (i.e., up-valley/down-valley diurnal patterns). The measured meteorological parameters should thus yield representative meteorological emission transport patterns in the vicinity of the proposed facility.

3.2.1.3 Performance of Air Impact Analyses

Demonstrations of protection of air quality related standards and parameters require: development of short-term (hourly and daily) and long-term (annual) emission rates of regulated pollutants; application of regulatory approved models to quantify predicted concentrations; and, a comparison of predicted impacts plus background concentrations with applicable standards. The air impact analyses will be conducted as follows.

- **Emission Inventory:** The emission inventory will be developed based upon the maximum planned short-term and long-term process rates for the various operations, applicable emission factors as provided by the equipment manufacturers or Environmental Protection Agency (EPA) AP-42 documents, and the planned pollution controls. The emission inventory will address all regulated pollutants (criteria and hazardous air pollutants). Although tailpipe emissions are not regulated by the air quality permitting agency, such emissions will be quantified and included in the air impact analyses for purposes of evaluating ambient impacts for inclusion in the Environmental Impact Statement (EIS) and air quality permit application.
- **Air Quality Impacts:** Air quality impacts will be evaluated using EPA's AERMOD Model. The AERMOD has recently replaced the ISC3 model. The air quality analysis will include development and submittal of a Modeling Protocol to the permitting agency for approval. The Modeling Protocol will describe the facility, the method used to characterize the emission sources, the facility surroundings and topography, the meteorological data to be used in the modeling analyses, the data that will be used to represent background concentrations, and all related modeling assumptions. Agency approval of the modeling protocol will ensure elimination of potential subsequent disputes on the modeling methodology and results.

- **Visibility Modeling:** Visibility impacts within Class I Areas will be evaluated using EPA's VISCREEN Model and, if necessary, the PLUVUE model. All analyses will be incorporated into a report for inclusion in the EIS. Visibility modeling will be conducted in accordance with guidance provided by the federal agency with jurisdiction over each Class I area. Per the EPA Region 9 and National Park Service webpages, the nearest Class I area is Saguaro National (Monument) Park East

Once the air impact analysis has been completed, the information will be used to facilitate the completion of the NEPA process and the air quality permitting documentation.

3.2.2 Dust Control Measures

3.2.2.1 Tailings

The Project will require engineering and physical controls to manage dust. The engineering controls will play an important role as good design and proper implementation will provide the primary control mechanism for dust. The physical controls will provide an additional protection and ensure that dust is managed in accordance with regulatory requirements.

Operational and engineering controls at this facility will consist of:

- Buttresses constructed of waste rock material that will break up air flow and reduce exposure of large areas of tailings to windy conditions. In this manner, dust is less likely to become airborne.
- Moisture content in the tailings delivered to the dry stack area will be between 10% and 15%. This is sufficient moisture to ensure that dust is not generated on the belts or in the stacking operation.
- Tailings will be stacked using a tripper arrangement on mobile conveyors. This stacking method creates an irregular shape to the placed tailings again breaking up air flow patterns so dust does not become entrained. Also, dozers, trippers and mobile conveyors will reduce the need for wheeled vehicles to drive across the tailings, which will minimize dust.
- Grind sizing will be such that 80% of the material will pass 150 mesh (0.0041 in) rather than the more conventional tailings sizing of 80% passing 250 to 325 mesh (0.0025 to 0.0017 in). This larger grain size will reduce the likelihood for dust to become airborne.

Physical controls for this facility are currently under investigation; however, anticipated controls include:

- Application of a binder material such as EnviroTac. This material binds particles on the surface of the tailings so that they the particles do not become airborne.
- Application of an agglomeration chemical to lines along the conveyor system. This process would be used to bind smaller particles together to make a larger overall grain size in the placed tailings.

- Application of water to suppress dust. Because water conservation is a very high priority, this is the least favorable physical control available. However, if it becomes necessary to control dust from limited areas of the tailings, water application may be used.

3.2.2.2 Mill Site

Water sprays will be used for dust control at the primary crusher dump pocket. Wet scrubbers will be used in the primary crushing building and crushed-ore stockpile building and tunnels. The crushed-ore stockpile and concentrate loadout are also covered.